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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/732,868 | 12/10/2003 | Han-Gu Sohn | 8729-226<br>(ID-200306-011-1 | 6860 |

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| EXAMINER | |
|---|---|
| DARE, RYAN A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2186 | |

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/732,868 | SOHN ET AL. | |
| | Examiner | Art Unit | |
| | Ryan Dare | 2186 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Korea on September 26, 2003. It is noted, however, that applicant has not filed a certified copy of the Korean Patent Application No. 2003-66944 as required by 35 U.S.C. 119(b).

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear whether the switching circuit mention in line 2 of claim 9 is the same switching circuit as already declared in parent claim 7.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-6, 10-15, 20-21, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patterson et al., US Patent 6,141,721, hereafter "Patterson", in view of Applicant's admitted prior art.

4. With respect to claim 1, Applicant teaches in the Background information section of the application, along with figs. 1-3 of admitted prior art, a semiconductor memory comprising:

a memory cell array;

a data buffer for processing data read from or written to the memory cell array;

Applicant fails to teach a data width control circuit for selectively controlling the width of the data buffer in response to one or more address bits of an external address signal. In the same art, Patterson teaches a memory device that accesses variable length data in response to one or more address bits of an external signal (col. 15, lines 18-31). By combining the data buffer of Applicant's background with the data width control circuit of Patterson you obtain:

a data width control circuit for selectively controlling a data width of the data buffer in response to one or more address bits of an external address signal.

5. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the memory access system of Applicant's admitted prior art with the memory access system of Patterson such that the data buffer as disclosed by Applicant is variable width, in order to allow variable data width access to a memory, which reduces the number of bits that are needed in encoding and simplifies the decoding process, as taught by Patterson in col. 16, lines 28-35.

6. With respect to claim 2, Patterson teaches the device of claim 1, wherein the data width control circuit comprises:

a decoder for decoding the external address signal in response to a data access command to generate a first control signal, in col. 19, lines 39-62; and

a data buffer controller responsive to the first control signal, to generate a second control signal for controlling the data width of the data buffer, in col. 19, lines 39-62.

7. With respect to claim 3, teaches the device of claim 1, wherein the data width control circuit selectively controls the data width of the data buffer by generating a control signal that masks or unmasks one or more bits of the data buffer, in col. 15 line 65 through col. 16, line 25.

8. With respect to claim 4, teaches the device of claim 3, wherein a masked bit is prevented from being input to the memory cell array from the data buffer, in col. 15 line 65 through col. 16, line 25. Since the unused bits are not needed and masked out, it would have been obvious to one of ordinary skill in the art to adapt the memory buffer of Applicant's prior art to not receive the masked bits.

9. With respect to claim 5, teaches the device of claim 3, wherein a masked bit is prevented from being output from the data buffer, in col. 15 line 65 through col. 16, line 25. Since the unused bits are not needed and masked out, it would have been obvious to one of ordinary skill in the art to adapt the memory buffer of Applicant's prior art to not output the masked bits.

10. With respect to claim 6, teaches the device of claim 1, wherein the data buffer has a width of n bits and wherein the data width of the data buffer is selectively controlled to be n bits or less, in col. 15, lines 20-23.

11. With respect to claims 6-10, these claims are similar to claims 1-6, except that they are claimed with an input and output data buffer instead of one data buffer. Since Applicant's background admits input and output buffers as prior art, these claims are rejected for similar reasons as claims 1-6.

12. With respect to claim 20, Applicant claims an integrated circuit device similar to the memory device of claim1 and is rejected using similar logic.

13. With respect to claim 21, Applicant claims a memory system comprising a controller for generating data access command signals and address signals, and the semiconductor memory device of claim 1, and is therefore rejected using similar logic.

14. With respect to claim 25, Applicant claims a method for providing data I/O width control in a semiconductor memory device similar to claim 1, and is therefore rejected using similar logic.

15. With respect to claim 26, Applicant claims a semiconductor memory device similar to claim 1, and is therefore rejected using similar logic.

16. With respect to claim 27, Applicant claims a semiconductor memory device similar to claim 1, and is therefore rejected using similar logic.

17. Claims 7-9 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patterson and Applicant's prior art as applied to claims 1-6, 10-15, 20-21, and 25-27 above, in view of Miyata et al., US Patent 4,706,219.

18. With respect to claim 7, Applicant's prior art and Patterson teach all other limitations of the parent claims as discussed supra, but fail to teach a decoder as described by claim 7. Miyata et al. teach a decoder which comprises:

a switching circuit, in fig. 7, switch 1; and

a logic circuit, wherein the switching circuit is response to the data access command to pass the external address signal to the logic circuit and wherein the logic circuit processes the external command to generate the first control signal based on the external command, in fig. 7 and col. 5 lines 60-65.

19. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the variable data length storage memory of Patterson and Applicant's prior art with the variable data length storage memory of Miyata et al. The patent issued to Patterson does not go into the structural detail necessary to read on independent claims 7-9, although the function is very similar. The patent issued to Miyata et al. does go into sufficient detail about the underlying implementation to enable the reference of to perform the functions necessary, such as generating the control signals to control the memory.

20. With respect to claim 8, Miyata et al. teach the device of claim 7, wherein the logic circuit comprises a plurality of parallel connected AND gates that receive the external address signal, and wherein the first control signal comprises a plural bit signal comprised of the output signals from the AND gates, in col. 6, lines 15-19.

21. With respect to claim 9, teaches the device of claim 8, wherein the data buffer controller comprises:

a switching circuit comprising a plurality of parallel connected switches, wherein each switch receives the data access command, and wherein one or more switches are selectively activated in response to the first control signal to generate the second control signal, the second control signal comprise a plural bit signal comprised of the output signals of the switches, in fig. 7.

22. With respect to claims 16-19, these are similar to claims 7-9, except applied to parent claim 10, which contains both an input and an output data buffer. Therefore claims 16-19 are rejected using similar reasoning as claims 7-9.

23. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patterson and Applicant's prior art as applied to claims 1-6, 10-15, 20-21, and 25-27 above, in view of Hirai, US Patent 5,349,448.

24. With respect to claim 22, Patterson and Applicant's prior art teach all limitations of the parent claims, but fail to explicitly describe that the controller is a microprocessor unit. Hirai teaches that the controller for use in the present invention can be a microprocessor unit, in col. 1, lines 32-35.

25. It would be obvious to one of ordinary skill in the art to modify the invention of Patterson and Applicant's prior art with the invention of Hirai to use a microprocessor unit as a controller in a storage system, because microprocessors are extremely well known in the art as ways to implement a controller.

26. With respect to claim 23, Patterson and Applicant's prior art teach all limitations of the parent claims, but fail to explicitly describe that the controller is a network control unit. Hirai teaches that the controller for use in the present invention can be a network control unit, in col. 1, lines 40-41.

27. It would be obvious to one of ordinary skill in the art to modify the invention of Patterson and Applicant's prior art with the invention of Hirai to use a network control unit as a controller in a storage system, because in the case where the invention is implemented over a network, a network control unit is necessary as in the system of Hirai.

28. With respect to claim 24, Patterson and Applicant's prior art teach all limitations of the parent claims, but fail to explicitly describe that the controller is a memory controller. Hirai teaches that the controller for use in the present invention can be a memory controller, in col. 1, lines 32-35 and fig.1, where it is obvious that the controller controls image memory and is therefore a memory controller.

29. It would be obvious to one of ordinary skill in the art to modify the invention of Patterson and Applicant's prior art with the invention of Hirai to use a memory controller as a controller in a storage system, because when you have a controller that controls

memory, as is the case in the present invention, Patterson, and in Hirai, the controller is a memory controller.

### *Response to Arguments*

30. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

31. The prior art made of record on form PTO-892 and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111(c) to consider these references fully when responding to this action. The documents cited therein teach similar memory systems.

32. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Dare whose telephone number is (571)272-4069. The examiner can normally be reached on Mon-Fri 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571)272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan A. Dare
June 25, 2006

TUAN V. THAI
PRIMARY EXAMINER